

Environmental Resources and Research

**UNC Center for Environmental Health and Susceptibility
Community Outreach and Education Core**

UNC Environmental Resource Program

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Goals

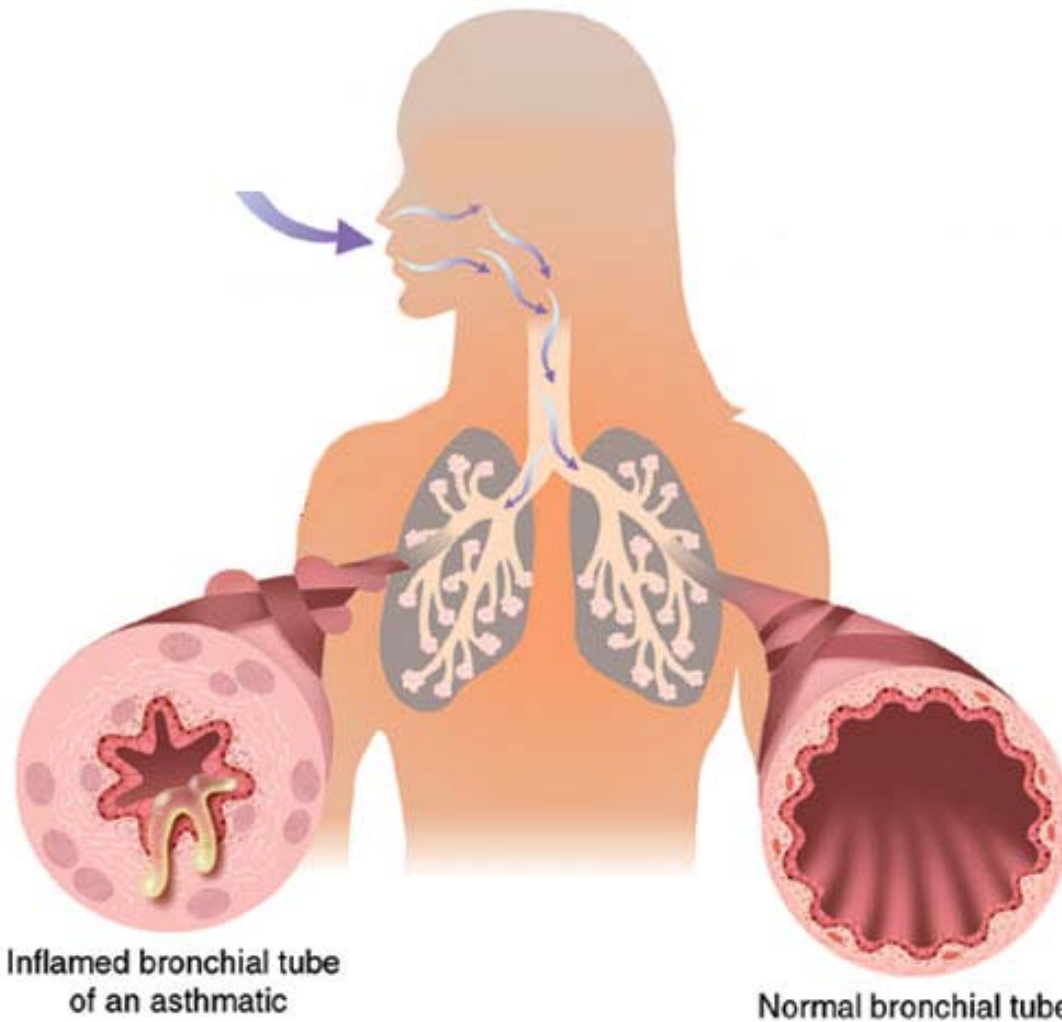
- Examine
 - asthma as an environmental health threat
 - latest research on environmental factors associated with the causes and triggers of asthma
 - indoor air pollution as a cause of respiratory disease
 - outdoor air pollution as a cause of respiratory disease
- Provide articles and other resources detailing the latest research on asthma as an environmental health threat

Asthma Overview

Asthma

- Disease of the lungs, airways inflamed and narrowed
- Most common chronic disease among children

Asthma



Asthma and the Environment

- We do not fully understand the causes of asthma
 - A combination of environment and genetics plays a role
- Children are more vulnerable
 - Higher respiration rates
 - Developing

Why Conduct Research?

The Goal

- To Prevent Disease ◀

Research is a Strategy to Prevent Disease

- Develop more effective prevention
(and treatment) approaches ◀

Tactics to Reduce Risk

- Raise public awareness of the need for research ◀
- Develop public awareness of the need for, and success of,
interventions and policy changes that can reduce risk ◀

Indoor Air Quality (IAQ)

What is research showing us about how indoor air pollution might cause asthma or make it worse?

Asthma and IAQ in the Home

- Mold
- Cockroaches
- Dust Mites
- Pets
- Gas Stoves and Space Heaters
- Tobacco Smoke
- Pollen



Asthma and IAQ in Schools

- Asthma is the number one cause of school absences in the US.
- Many schools have poor indoor air and environmental quality.
- Major School IAQ Indicators:
 - Dust
 - Ventilation
 - Finishes, furnishings, and cleaning and teaching products
 - Moisture and mold
 - Pesticides

Outdoor Air Quality

What is research showing us about how outdoor air pollution might cause asthma or make it worse?

Asthma and Outdoor Air Quality

- Outdoor air pollution can have long term effects on your health and can make asthma worse.
- Sources of air pollution:
 - Point sources: *factories, power plants*
 - Area sources: *oil refineries*
 - Mobile sources: *cars, buses, and trucks*

Asthma and Outdoor Air Quality

- **Point sources: *factories, power plants***
 - **SO₂** (sulfur dioxide) = *breathing problems and lung damage*
- **Area sources: *oil refineries***
 - **Ozone** (ground level O₃) = *damage lung tissue, cause breathing problems, and suppress body's immune system*
- **Mobile sources: *cars, buses, and trucks***
 - **Particles** (also called particulate matter or PM) = *smaller particles cause lung damage, breathing problems and trigger asthma*
 - **NO₂** (nitrogen dioxide) = *irritates the lungs, causing bronchitis and pneumonia*
- **Smog = ozone pollution and particles**

Asthma and Outdoor Air Quality

- **In North Carolina, most air pollution comes from two major sources:**
 - **electricity production and**
 - **motor vehicles.**

Asthma and Diesel



- Diesel exhaust is a mixture of hundreds of compounds, including particles, and contributes to the formation of ozone.

Asthma and Diesel



- *Research findings show:*
 - Children living close to high-traffic areas = more doctor visits for asthma
 - Children going to school close to high-traffic areas = more chronic respiratory problems and doctor-diagnosed asthma

Let's Take a *Breath of Fresh Air*

Activity: Watch “A Breath of Air: What
Pollution is Doing to Our Children”
Video

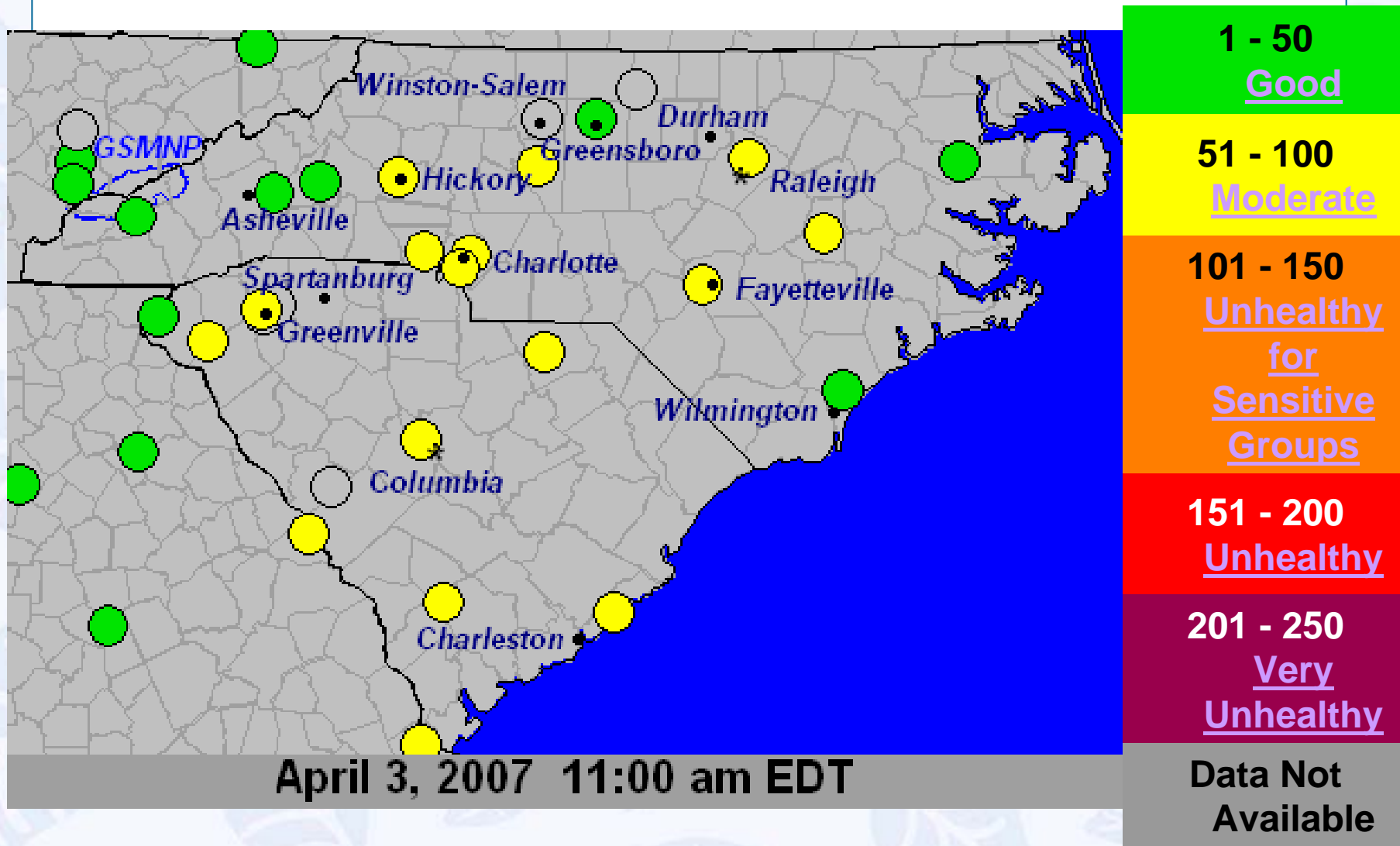
Children's Health Study

- The study found that air pollution leads to the following:
 - *Decreased lung function*
 - *More frequent respiratory illness*
 - *Increased school absences*
 - *Developing asthma – onset of new asthma cases*
 - *Kids with asthma are more likely to get bronchitis, cough and produce phlegm, which makes them sicker*

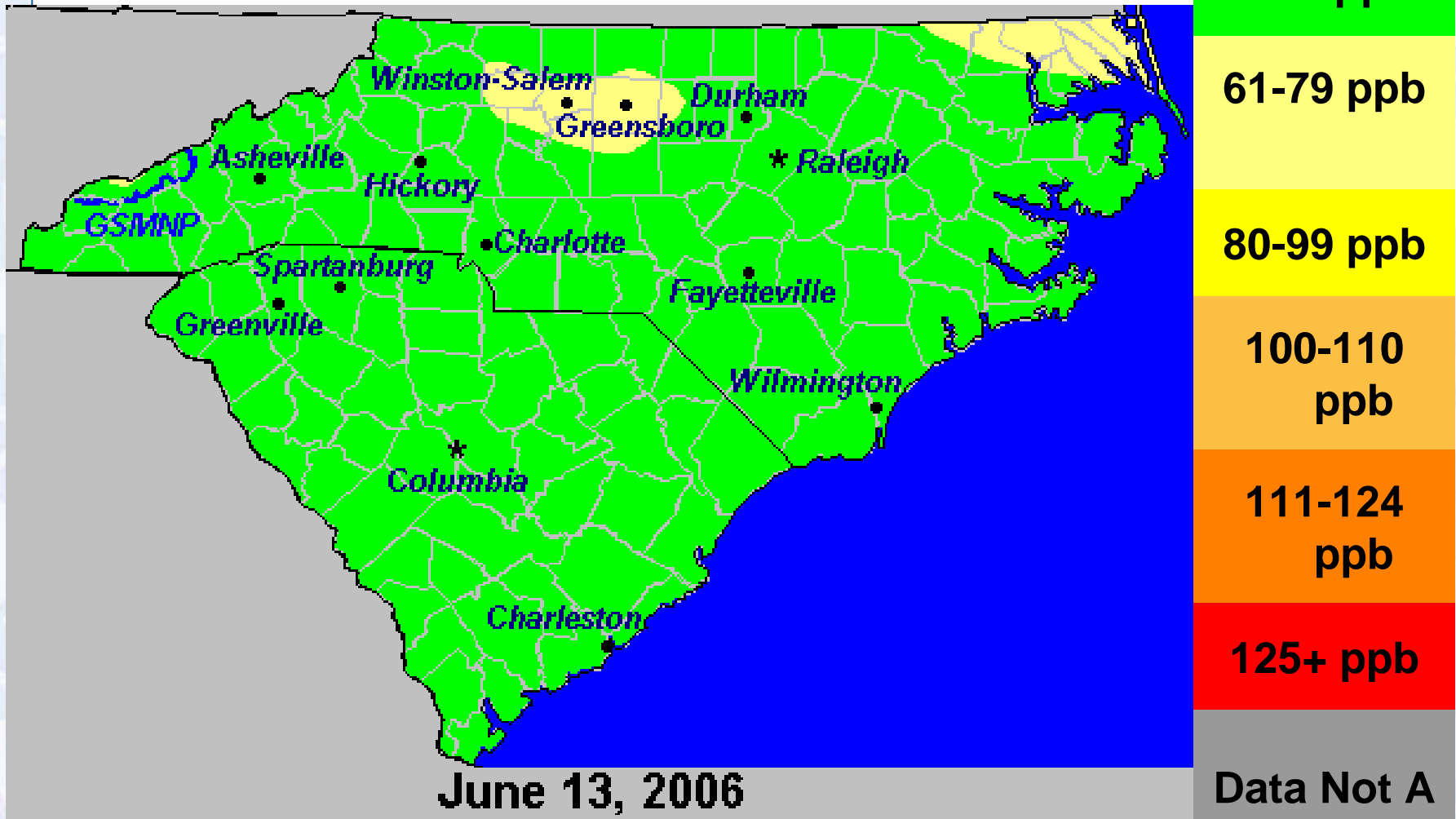
Do we have high levels of air pollution?

- EPA's Air Now www.airnow.gov
- NC Air Awareness www.ncair.org

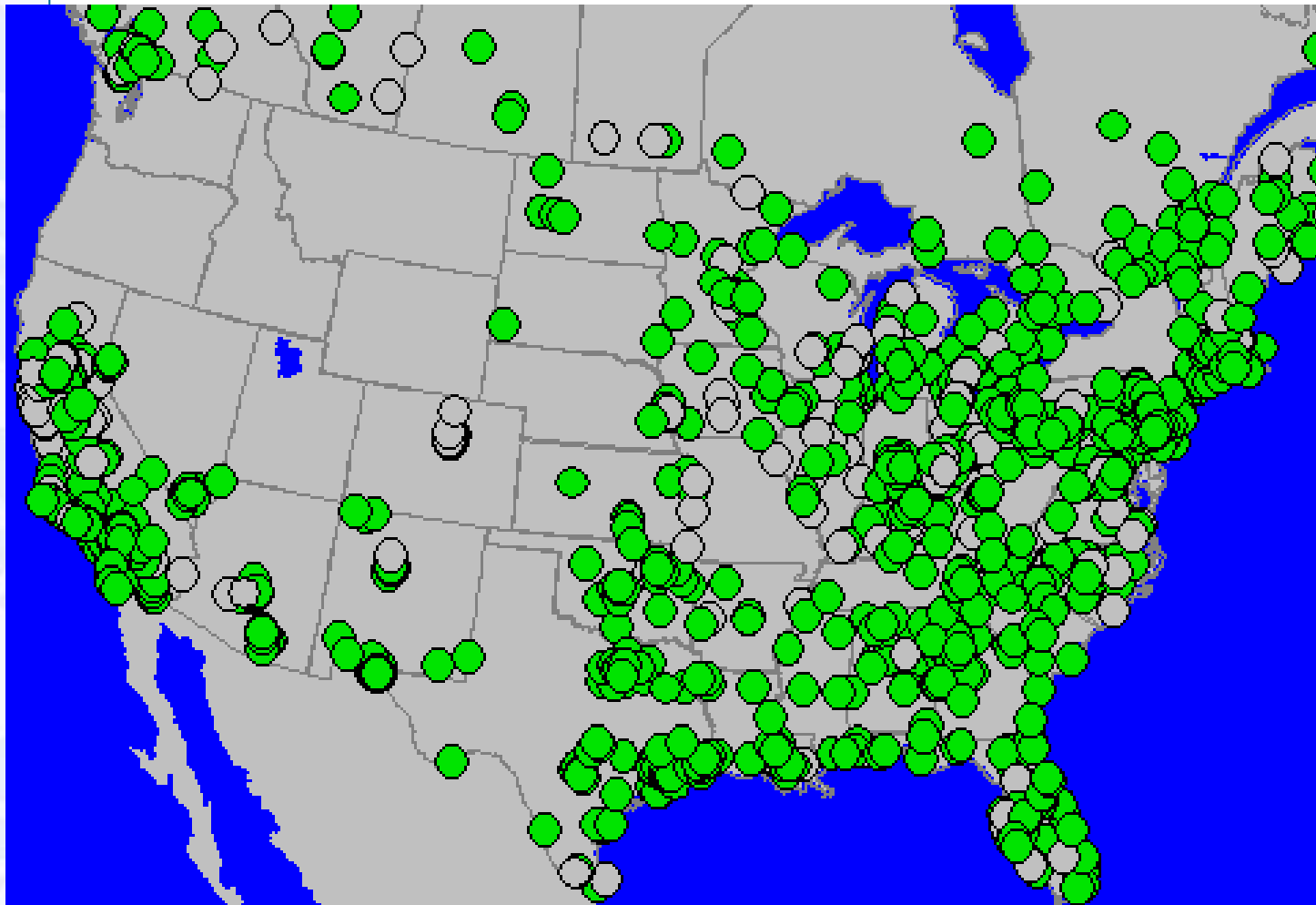
Particles (PM2.5): Current Hour North Carolina / South Carolina Tuesday, April 3, 2007



Ozone: 1-Hour Average Peak Concentration North Carolina / South Carolina, June 13, 2006 Ozone – May - September



Ozone: Current Hour AQI United States Tuesday, April 3, 2007



April 3, 2007 11:00 am EDT

1 - 50
Good

51 - 100
Moderate

101 - 150
Unhealthy
for
Sensitive
Groups

151 - 200
Unhealthy

201 - 250
Very
Unhealthy

Data Not
Available

Policy Efforts to Reduce Risk

What policy efforts can help reduce risk and how does research play a role?

Policy Changes for Schools

- Asthma-friendly flag programs
 - Use a flag outside when air quality is poor
- School buses
 - Don't let buses idle near school entrances
 - Replace diesel buses with cleaner fuels
- School location
 - Prohibit building schools closer than 500 feet from a busy road or freeway (based on a scientific study of pollution near roads)
- Healthy indoor air quality
 - Ensure proper maintenance to reduce allergens and pollutants in the classroom

Resources

- UNC Chapel Hill, Center for Environmental Health and Susceptibility
<http://cehs.sph.unc.edu>
- NIH National Institute of Environmental Health Science, www.niehs.nih.gov
- California Air Resources Board
www.arb.ca.gov
- Community Action to Fight Asthma
<http://www.calasthma.org/>

Resources

- NC Asthma Program
www.asthma.ncdhhs.gov
- NC Division of Air Quality
<http://daq.state.nc.us>
- NC Division of Environmental Health
www.deh.enr.state.nc.us
- NC Division of Public Health, Chronic Disease and Injury Section
www.communityhealth.dhhs.state.nc.us

Evaluation

We appreciate your participation in today's workshop. Please share your reactions, ideas and questions on the evaluation form provided.

Thank you!

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